

CLAIMS

1. A progeny cell derived from a parent cell, wherein

- a) the progeny cell comprises at least one gene encoding MrgA protein or a functional homologue thereof and/or a DNA segment operably linked with the encoding gene, wherein said gene and/or DNA segment is manipulated with respect to the parent cell;
- b) the progeny cell comprises two or more copies of a gene encoding MrgA protein or a functional homologue thereof; or
- c) the progeny cell is mutated with respect to the parent cell;

whereby the progeny cell produces greater amounts of MrgA protein or a functional

10 homologue thereof than the parent cell.

2. The cell of claim 1, which produces greater amounts of a protein of interest than the parent cell; preferably the protein of interest is an intracellular protein or an exoprotein.

15 3. The cell of claims 1 or 2, which is a bacterial cell, preferably a prokaryotic cell, more preferably a Gram-positive cell, and most preferably of the genus *Bacillus*.

4. The cell of claim 3, which is of a species chosen from the group consisting of *Bacillus alkalophilus*, *Bacillus amyloliquefaciens*, *Bacillus brevis*, *Bacillus circulans*, *Bacillus coagulans*, *Bacillus lautus*, *Bacillus lenthus*, *Bacillus licheniformis*, *Bacillus stearothermophilus*, *Bacillus subtilis*, and *Bacillus thuringiensis*.

5. The cell of any of claims 2-4, wherein said protein of interest is homologous or heterologous.

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6. The cell of any of claims 2-5, wherein said protein is a protease, a lipase, a cutinase, an amylase, a galactosidase, a pullulanase, a cellulase, a glucose isomerase, a protein disulphide isomerase, a CGT'ase (cyclodextrin gluconotransferase), a phytase, a glucose oxidase, a glucosyl transferase, lactase, bilirubin oxidase, a xylanase, an antigenic microbial or protozoan protein, a bacterial protein toxin, a microbial surface protein, or a viral protein.

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35 7. The cell of any of claims 1-6, wherein the MrgA protein or functional homologue thereof comprises an amino acid sequence which is at least 70% identical to the amino acid sequence shown in SEQ ID NO:2, preferably at least 75%, 80%, 85%, 90%, 95%, 97%, or even 99% identical to the amino acid sequence shown in SEQ ID NO:2.

8. The cell of any of claims 1-7, wherein the MrgA protein or functional homologue thereof comprises the amino acid sequence shown in SEQ ID NO:2.

9. The cell of any of claims 1-8, which comprises at least one exogenous copy of a polynucleotide encoding MrgA protein or a functional homologue thereof comprising an amino acid sequence which is at least 70% identical to the amino acid sequence shown in SEQ ID NO:2, preferably at least 75%, 80%, 85%, 90%, 95%, 97%, or even 99% identical to the amino acid sequence shown in SEQ ID NO:2.

10 10. The cell of any of claims 1-9, which comprises at least one exogenous copy of a polynucleotide encoding MrgA protein or a functional homologue thereof comprising the amino acid sequence shown in SEQ ID NO:2.

11. The cell of any of claims 1-10, which comprises at least one exogenous copy of a polynucleotide, which:

- a) comprises a polynucleotide sequence which is at least 70% identical to the sequence shown in SEQ ID NO:1; preferably at least 75%, 80%, 85%, 90%, 95%, 97%, or even 99% identical to the sequence shown in SEQ ID NO:1; or
- b) hybridizes with the sequence shown in SEQ ID NO:1, under medium stringency conditions, preferably under medium-high stringency, and more preferably under high stringency conditions.

12. The cell of any of claims 1-11, wherein at least one exogenous copy of a gene encoding the MrgA protein or a functional homologue thereof is transcribed from one or more heterologous and/or artificial promoter.

13. The cell of any of claims 1-12, wherein at least one exogenous copy of a gene encoding the MrgA protein or a functional homologue thereof is integrated into the genome of the cell.

30 14. The cell of any of claims 1-12, wherein at least one exogenous copy of a gene encoding the MrgA protein or a functional homologue thereof is present on an extra-chromosomal construct, preferably a plasmid.

35 15. A method for enhancing secretion of a protein of interest, the method comprising expressing said protein in a cell according to any of the preceding claims.

16. A method for producing a cell as defined in any of claims 1-14 useful for production of a protein of interest, said method comprising a step of manipulating a cell to increase the expression of MrgA protein or functional homologue thereof.

5 17. The method of claim 16, wherein the cell produces greater amounts of a protein of interest than the non-manipulated parent cell; preferably the protein of interest is an intracellular protein or an exoprotein.

18. The method of claims 16 or 17, wherein said method comprises the steps of:

10 a) identifying a gene from the parent cell that encodes MrgA protein or a functional homologue thereof; and
b) manipulating the cell to increase the expression of the gene identified in step (a), whereby the manipulated progeny cell expresses greater amounts of MrgA protein or functional homologue thereof, than the non-manipulated cell.

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19. The method of any of claims 16-18, wherein the cell is a bacterial cell, preferably the cell is a prokaryotic cell, more preferably a Gram-positive cell, and most preferably the cell is of the genus *Bacillus*.

20 20. The method of claim 19, wherein the cell is of a species chosen from the group consisting of *Bacillus alkalophilus*, *Bacillus amyloliquefaciens*, *Bacillus brevis*, *Bacillus circulans*, *Bacillus coagulans*, *Bacillus lautus*, *Bacillus lentus*, *Bacillus licheniformis*, *Bacillus stearothermophilus*, *Bacillus subtilis*, and *Bacillus thuringiensis*.

25 21. The method of any of claims 16-20, wherein said protein of interest is a protease, a lipase, a cutinase, an amylase, a galactosidase, a pullulanase, a cellulase, a glucose isomerase, a protein disulfide isomerase, a CGT'ase (cyclodextrin gluconotransferase), a phytase, a glucose oxidase, a glucosyl transferase, lactase, bilirubin oxidase, a xylanase, an antigenic microbial or protozoan protein, a bacterial protein toxin, a microbial surface protein, 30 or a viral protein.

22. A method for producing a protein of interest, comprising the steps of:

a) cultivating a cell as defined in any of claims 2-14; and
b) recovering the protein.

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23. The method of claim 22, wherein the cell is a bacterial cell, preferably the cell is a prokaryotic cell, more preferably a Gram-positive cell, and most preferably the cell is of the genus *Bacillus*.

5 24. The method of claim 23, wherein the cell is of a species chosen from the group consisting of *Bacillus alkalophilus*, *Bacillus amyloliquefaciens*, *Bacillus brevis*, *Bacillus circulans*, *Bacillus coagulans*, *Bacillus lautus*, *Bacillus lentus*, *Bacillus licheniformis*, *Bacillus stearothermophilus*, *Bacillus subtilis*, and *Bacillus thuringiensis*.

10 25. The method of any of claims 22-24, wherein said protein of interest is a protease, a lipase, a cutinase, an amylase, a galactosidase, a pullulanase, a cellulase, a glucose isomerase, a protein disulfide isomerase, a CGT'ase (cyclodextrin gluconotransferase), a phytase, a glucose oxidase, a glucosyl transferase, lactase, bilirubin oxidase, a xylanase, an antigenic microbial or protozoan protein, a bacterial protein toxin, a microbial surface protein, 15 or a viral protein.

26. Use of MrgA-protein or a functional homologue thereof in a method for enhancing production of a protein by manipulating or mutating a cell to express greater amounts of MrgA protein or functional homologue thereof than the non-manipulated or non-mutated cell.